

Passenger cars side door impact beam: a review

ABSTRACT

This paper discusses the development of side door impact beam for passenger cars from published journals. Side door impact beam is installed in the door of the car to protect occupants in the passenger compartment during side impact collision. The design of the component adheres to regulations stipulated by the FMVSS 214 standards for side impact collision test. Three shapes of side door impact beam were applied to passenger car can be categorized as, namely tubular beam, panel, and belt. Apart from that, various materials such as alloys, composites, and metal/composites hybrid were used to manufacture the component. Essentially, the selection of materials affects its strength, stiffness and weight. In addition, this study also covers the connection of side door impact beam to the door in order to analyse the occurrence of failures during side impact collision. To ensure that the beam has maximum energy absorption, the mechanically joint connection or adhesive must remain intact before the beam break. Finally, the conclusion of this review is formulated based on data from previous studies.

Keyword: Side door impact beam; Side impact; FMVSS 214; Energy absorption; Specific energy absorption; Impact energy